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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,770	01/23/2002	Shigeo Fujimori	1023-02	8726

35811 7590 03/16/2004

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT PAPER NUMBER

1762

DATE MAILED: 03/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/055,770

Applicant(s)

FUJIMORI ET AL.

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-4,9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-2 and 10, drawn to a vapor deposition mask, classified in class 118, subclass 720.
 - II. Claim 3, drawn to an apparatus for assembling the mask, classified in class 29, subclass 281.5.
 - III. Claim 4, drawn to a method of assembling the mask, classified in class 29, subclass 407.1.
 - IV. Claims 5-8, drawn to a method of making an electroluminescent (EL) device, classified in class 427, subclass 66.
 - V. Claim 9, drawn to an EL device, classified in class 313, subclass 504.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the product as claimed can be made by another and materially different apparatus, such as assembling by hand.
3. Inventions III and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed may be made by another and materially different process, such as assembling by hand.
4. Inventions IV and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as

claimed can be used in a materially different process such as depositing a series of color filters for a liquid crystal display device.

5. Inventions I and V are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the product as claimed can be made by another and materially different apparatus, such as by evaporation through a single mask without engaging units that retain disengageable sub-masks.

6. Inventions III and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the product as claimed can be made by an apparatus which does not have disengaging units.

7. Inventions II and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are not disclosed as capable of use together and have different operations, functions, and effects because invention II is an apparatus that operates by assembly to produce a vapor deposition mask and invention IV is a method that operates by vapor deposition to produce a light-emitting diode.

8. Inventions II and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are not disclosed as capable of use together and have different operations, functions, and effects because invention II is an apparatus that operates by assembly to produce a vapor deposition mask and invention V is a product that operates by establishing a potential drop across a light-emitting layer to cause the layer to emit light.

9. Inventions III and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different

functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are not disclosed as capable of use together and have different operations, functions, and effects because invention III is a method that operates by assembly to produce a vapor deposition mask and invention IV is a method that operates by vapor deposition to produce a light-emitting diode.

10. Inventions III and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are not disclosed as capable of use together and have different operations, functions, and effects because invention III is a method that operates by assembly to produce a vapor deposition mask and invention V is a product that operates by establishing a potential drop across a light-emitting layer to cause the layer to emit light.

11. Inventions IV and V are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different method, such as by evaporation through a single mask without engaging units that retain disengageable sub-masks.

12. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

13. During a telephone conversation with T. Daniel Christenbury on 2/25/2003 a provisional election was made without traverse to prosecute the invention of Group IV, claims 5-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-4 and 9-10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

14. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

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application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Interpretation

15. Elected claims 5-8 depend from non-elected claim 1. Therefore claim 5 has been interpreted as requiring the features of claim 1. However, claim 5 should be placed in independent form in order to reduce issues later in prosecution.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claim 5-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark et al. (U.S. Patent 6,589,382, hereafter '382) in view of Tang et al. (U.S. Patent 5,904,961, hereafter '961) and Duggal et al. (U.S. Patent Application Publication 2002/0190661, hereafter '661).

'382 teaches an integrated mask comprising a plurality of deposition masks (12a-12d) having an array of deposition apertures formed in accordance with a deposition pattern;

a base plate (22) having a plurality of openings (24, 26) and on which the deposition masks are arranged,

wherein the deposition masks are retained to the base plate by engaging units, such as screws (col. 3, lines 17-26), in a disengageable manner (col. 2, lines 31-38), and

wherein alignment marks (19) used for positioning the deposition masks on the base plate are formed on the base plate.

'382 teaches aligning the mask with the substrate (Abstract) and using the mask to deposit the organic layer of an organic light emitting device (col. 1, lines 51-56).

'382 does not explicitly teach using the alignment marks on the mask to align the mask and the substrate nor does it explicitly teach the use of the mask to deposit more than one EL device on the same substrate.

'961 teaches using the alignment mark on the mask in order to align the mask and substrate for the deposition of EL devices. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the alignment marks of '382 to have aligned the mask and substrate of '382 with a reasonable expectation of success because '961 teaches that alignment marks on the mask are suitable for aligning the mask and substrate.

'661 teaches the provision of more than one EL device on the same substrate [0070] by evaporating the EL material through a shadow mask [0100]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the deposition mask of '382 to have deposited more than one EL device on the same substrate with a reasonable expectation of success because '661 teaches that multiple EL devices on the same substrate may be used to convey information, such as advertising and because the mask of '382 has multiple open areas for deposition.

19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clark '382 in view of Tang '961 and Duggal '661, and further in view of Nagayama et al. (U.S. Patent 5,701,055, hereafter '055).

'382, '961, and '661 are discussed above, but do not explicitly teach the use of m masks to deposit n organic EL devices where n is an integer (greater than 1) multiple of m. However, it

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is well known in the art of EL devices to use masks to produce repeating patterns of pixels. For example, '055 teaches moving a deposition mask to produce red, blue, and green pixels (See Figs. 8A-8C and col. 8, line 41-col. 9, line 19) in repeating matrix (See Figs. 1-2; col. 6, lines 17-30). ('055 does not by itself teach that the pixels are individual EL devices because the pixels occur at the crossing of a plurality of perpendicular anode (3) and cathode (9) stripes.) Taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have deposited the matrix of red, blue, and green pixels as individual EL device each with its own anode, EL layer(s), and cathode because '661 demonstrates that separate EL devices may be independently deposited on the same substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have re-used the plural (m) masks of '382 to have produced the pixels of the three colors by having moved the masks between depositions of the colors because '055 teaches that such is a suitable method of depositing red, blue, and green pixels, thereby resulting in $(n=3*m)$ pixel EL devices.

20. Claim 5-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudreau et al. (U.S. Patent 4,915,057, hereafter '057) in view of Tang et al. (U.S. Patent 5,904,961, hereafter '961) and Duggal et al. (U.S. Patent Application Publication 2002/0190661, hereafter '661).

'057 teaches an integrated mask comprising a plurality of deposition masks (20) having an array of deposition apertures (See Fig. 1) formed in accordance with a deposition pattern for plural substrates (col. 4, lines 9-25);

a base plate (14) having a plurality of openings (on either side of frame support (16)) on which the deposition masks are arranged,

wherein the deposition masks are retained to the base plate by engaging units (mask frame pins (17) (col. 4, lines 17-22) (The description of the use of pins to attach the assembled mask to the substrate demonstrates that pins are disengageable (col. 4, lines 49-62; col. 3, lines 13-25; and col. 6, lines 30-53), and

wherein the base plate comprises alignment features (holes; holes (21) on mask (20) are identified by number, but the alignment holes on base plate (14) are not identified by number, see Fig. 1).

'057 teaches positioning the mask and substrates (32) to be subjected to a deposition process and patterning a thin film layer in the deposition process using the mask to form an electroluminescent device (col. 1, lines 35-45).

'057 does not explicitly teach 1) that the mask comprises alignment marks on the base plate, 2) depositing more than one EL device on the same substrate, nor 3) that the EL device is organic.

'961 teaches the use of alignment marks in order to align the mask and substrate for the deposition of EL devices. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used provided alignment marks on the mask of '057 to have aligned the mask and substrate of '057 with a reasonable expectation of success because '961 teaches that alignment marks on the mask are suitable for aligning the mask and substrate. Likewise, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used alignment marks on each component of the mask to assemble the mask because '057 teaches the use of alignment features on each portion, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included at least one alignment mark on the base plate (14) with a reasonable expectation of success.

'661 teaches the provision of more than one EL device on the same substrate [0070] by evaporating the EL material through a shadow mask [0100]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the deposition mask of '057 to have deposited more than one EL device on the same substrate with a reasonable expectation of success because '661 teaches that multiple EL devices on the same substrate may be used to convey information, such as advertising and because the mask of '057 has multiple open areas for deposition.

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'961 and '661 are both directed to vapor deposition to form organic light-emitting devices as discussed above and in the abstracts of both references. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the mask of '057 to have deposited layers of an organic EL device because '057 teaches that it is suitable for use in manufacturing EL devices, and '661 and '961 both indicate that vapor deposition through shadow masks are useful for forming EL devices.

Claim 6: '057 teaches the use of two masks.

Claim 8: '961 teaches evaporation of the organic layer [0100] or metal electrode [0108-0109] through a shadow mask.

21. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boudreau '057 in view of Tang '961 and Duggal '661 as applied to claim 5 and further in view of Nagayama '055 for substantially the same reasons given for claim 7, above.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Tuesday-Friday and alternate Mon, 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Cleveland

Patent Examiner

March 8, 2004